Chapter 10
Suspension and steering systems

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Specifications

Torque specifications

	Ft-lbs
Steering linkage	
Steering knuckle-to-tie-rod end nut	40
Tie-rod clamp nuts	14
Tie-rod-to-relay rod nut	40
Pitman arm-to-relay rod nut	40
Pitman arm-to-steering gear nut	185
Idler arm-to-relay rod nut	40
Idler arm-to-frame nut	50
Power steering pump	
Reservoir bolt	35
Flow control fitting	35
Pressure hose fitting	20
Power steering gear	
Gear-to-frame bolts	80
High pressure line fitting at gear	20
Oil return line fitting at gear	20
Coupling flange bolt	30
Coupling flange nut	20

Torque specifications

	Ft-lbs
Steering wheel and column	
Steering wheel-to-shaft nut	30
Bracket-to-steering column support nuts	25
Toe-pan-to-dash screws	45 in-lbs
Toe-pan clamp screws	60 in-lbs
Bracket-to-steering column bolt	30
Cover-to-housing screws	100 in-lbs
Clamp-to-steering shaft nut	55
Support-to-lock plate screws	60 in-lbs
Front suspension (2WD models)	
Shock absorber upper nut	8
Shock absorber-to-control arm bolts	20
Upper control arm-to-frame nuts	45
Lower control arm-to-frame nuts (weight on wheels)	65
Upper control arm pivot shaft nuts	85
Stabilizer bar link nuts	13
Stabilizer bar bracket-to-frame bolts	24
Lower balljoint	90
Upper balljoint	65
Front suspension (4WD models)	
Shock absorber nuts	55
Lower control arm-to-frame nuts	92
Upper control arm-to-frame nuts	70
Lower balljoint	83
Upper balljoint	50
Driveaxle hub retaining nut	See Chapter 8
Driveaxle hub-to-steering knuckle bolts	77
Torsion bar crossmember retainer bolts	25
Rear suspension	
Shock absorber upper bolts	15
Shock absorber lower nut	50
Leaf spring U-bolts (final torque)	85
Leaf spring eye bolts	88
Leaf spring rear shackle-to-frame bolt	88

1 Front suspension – general information

The front suspension on both 2WD and 4WD models is fully independent, allowing each wheel to compensate for road surface changes without appreciably affecting the opposite wheel.

Each wheel is connected independently to the frame by a steering knuckle, upper and lower balljoints and upper and lower control arms. The front wheels are held in proper relationship to each other by tie-rods, which are connected to the steering knuckles and to a relay rod assembly.

2WD models

Refer to illustration 1.3

Chassis suspension is handled by coil springs mounted between the lower control arms and the frame **(see illustration)**. Shock absorbers are mounted inside each coil spring, bolted to the lower control arm and passing through the upper control arm to bolt to the upper control arm frame bracket.

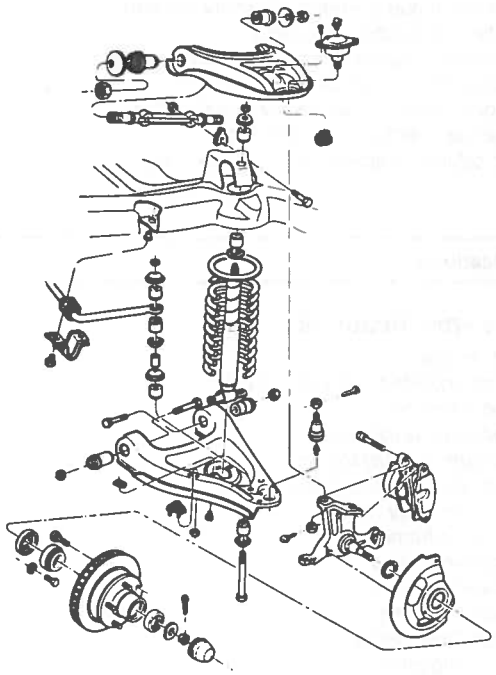
Side roll is controlled by a stabilizer bar mounted to the frame in rubber bushings. Rubber grommeted link bolts attach the ends of the stabilizer bar to the lower control arms.

4WD models

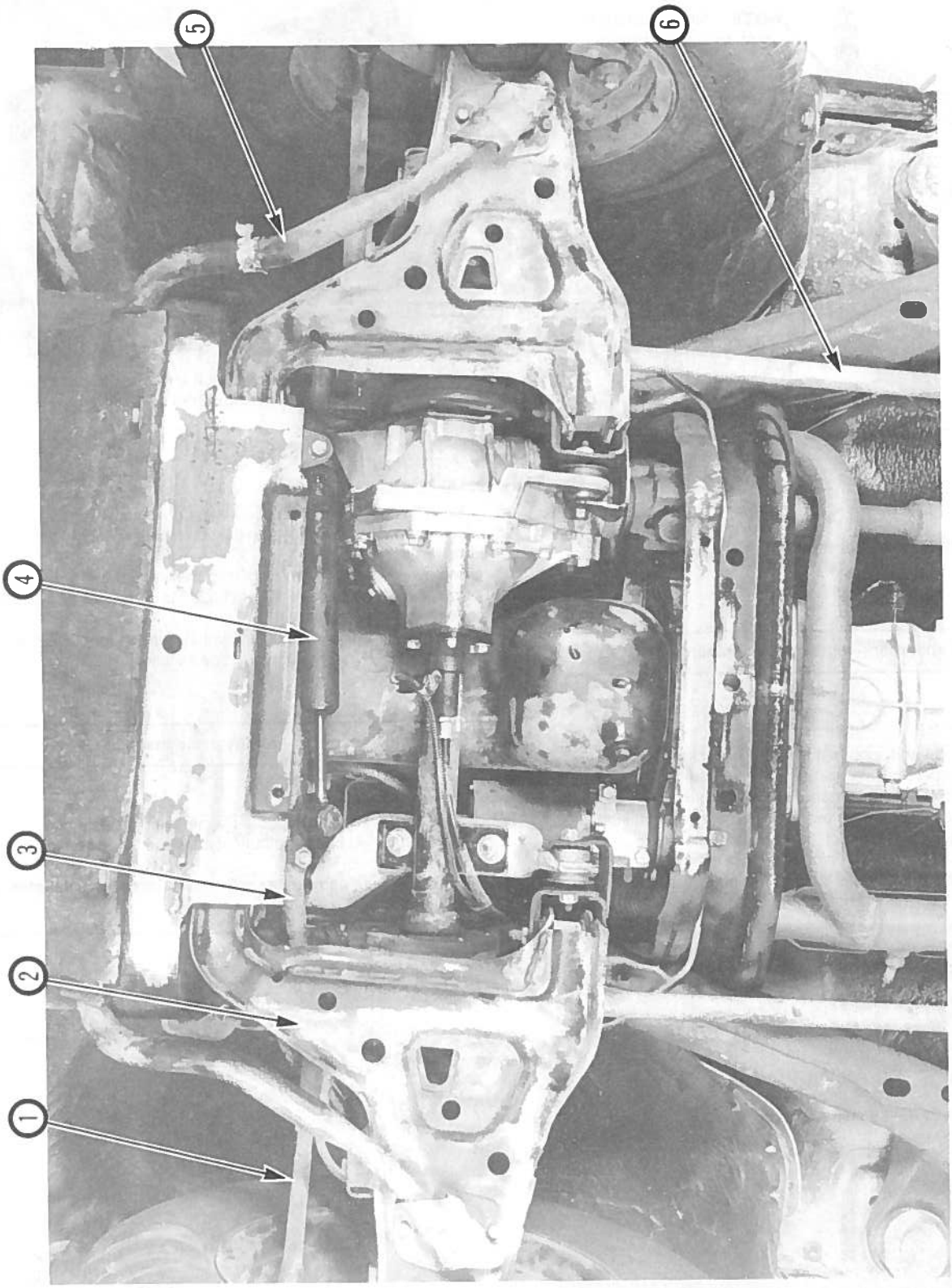
Refer to illustration 1.5

The basic layout of the front suspension on 4WD models **(see illustration)** is the same as that of 2WD models, with the exception of the replacement of the coil springs with torsion bars. These allow the front driveaxles access to the drive hubs.

The torsion bars are mounted to the lower control arms and are anchored in a frame crossmember with an adjustable arm to control the trim height of the vehicle.

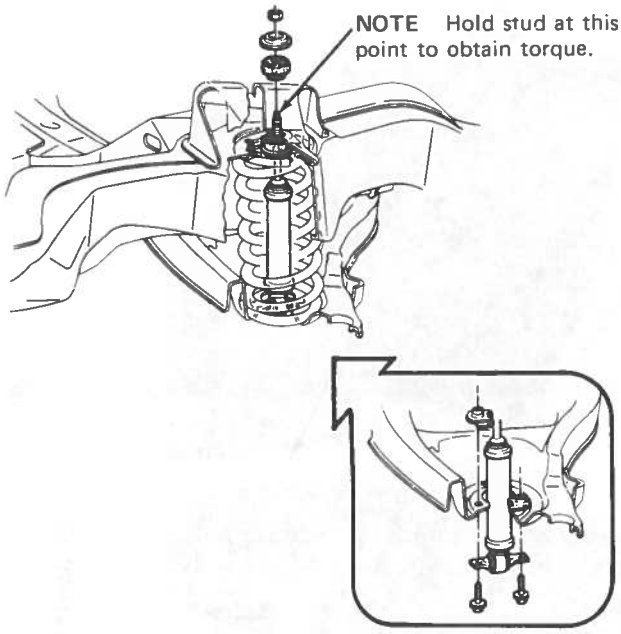


1.3 An exploded view of the front suspension components (2WD models)



1.5 Suspension and steering components (4WD models)

1 Tie-rod
2 Lower control arm
3 Relay rod
4 Steering stabilizer
5 Stabilizer bar
6 Torsion bar



2.2 Front shock absorber mounting details (2WD models)

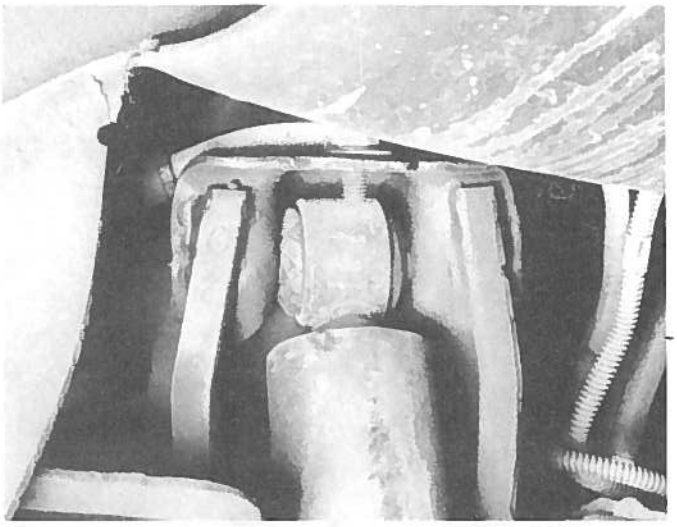
2 Front shock absorber – removal and installation

2WD models

Refer to illustration 2.2

1 Raise the vehicle and support it securely on jackstands.
2 Remove the upper shock absorber stem nut **(see illustration)**. Use an open end wrench to keep the upper stem from turning.
3 Remove the two bolts at the lower shock mount and pull the shock absorber out through the bottom of the lower control arm.
4 Installation is the reverse of removal. Be sure to tighten the nuts/bolts to the torque listed in this Chapter's Specifications.

3.2 Location of the rear shock absorber upper mount



2.6 Location of the front shock absorber upper mount (4WD models)

4WD models

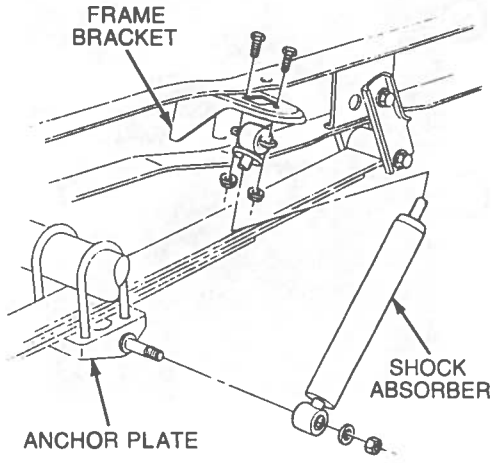
Refer to illustrations 2.6

5 Raise the vehicle and support it securely on jackstands.
6 Remove the nut and bolt from the upper shock absorber mount **(see illustration)**.
7 Remove the nut and bolt from the lower mount on the control arm.
8 Compress the shock absorber enough to slide it off the mounts and remove it from the vehicle.
9 Installation is the reverse of removal. Be sure to tighten the nuts/bolts to the torque listed in this Chapter's Specifications.

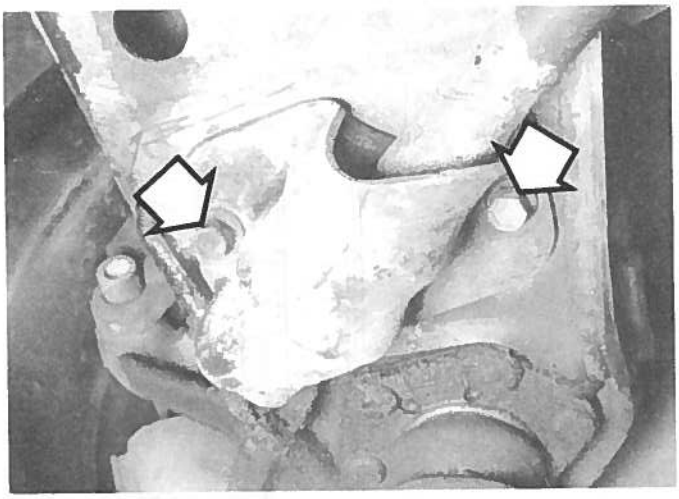
3 Rear shock absorber – removal and installation

Refer to illustrations 3.2 and 3.3

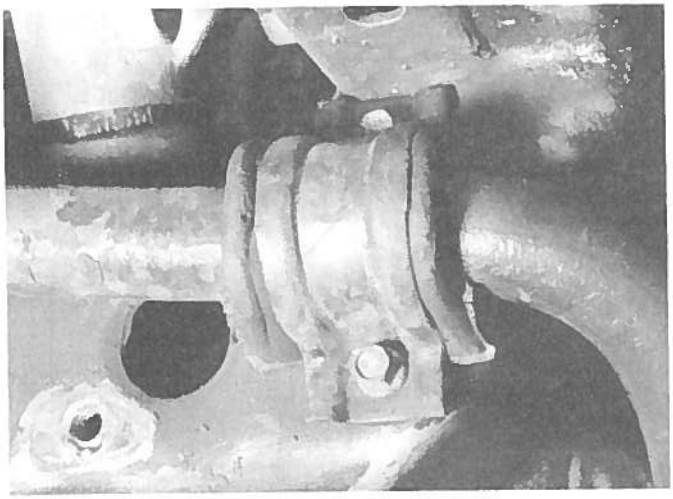
1 Raise the vehicle and support it securely on jackstands.
2 Remove the two bolts and nuts at the upper shock absorber mount **(see illustration)**.
3 Remove the nut and washer at the lower mount **(see illustration)**.



3.3 Rear shock absorber mounting details (all models)



4.2 Location of the stabilizer bar-to-control arm bolts (4WD model shown)



4.3 Location of the stabilizer bar-to-frame bolts (4WD model shown)

4 Slide the shock absorber off the lower mount and detach it from the vehicle.

5 Installation is the reverse of removal. Be sure to tighten the nuts/bolts to the torque listed in this Chapter's Specifications.

4 Stabilizer bar – removal and installation

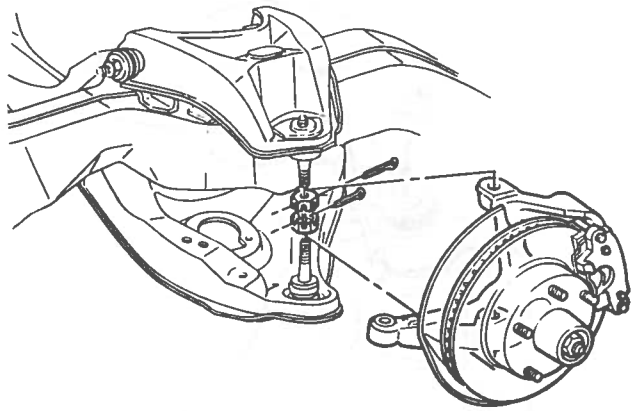
Refer to illustrations 4.2 and 4.3

1 Raise the vehicle and support it securely on jackstands.

2 On 2WD models, remove the bolts from each end of the stabilizer bar at the lower control arms. Note the positions of the grommets and spacers **(see illustration)**. On 4WD models, disconnect the torsion bars (see Section 10) from the crossmember to allow free movement of the lower control arms. Remove the stabilizer bar mounting cups from the lower control arms.

3 Remove the mounting bolts from the frame and detach the stabilizer bar, bushings and brackets **(see illustration)**

4 Installation is the reverse of removal. Install the control arm nuts first, then the frame bolts. Tighten all fasteners to the torque listed in this Chapter's Specifications.



5.5 Steering knuckle mounting details (2WD models)

5 Steering knuckle and balljoints (2WD models) – removal and installation

Refer to illustrations 5.5, 5.6, 5.8, 5.9, 5.10, 5.11 and 5.12

1 Raise the vehicle and support it securely on jackstands.

2 Remove the wheel and tire.

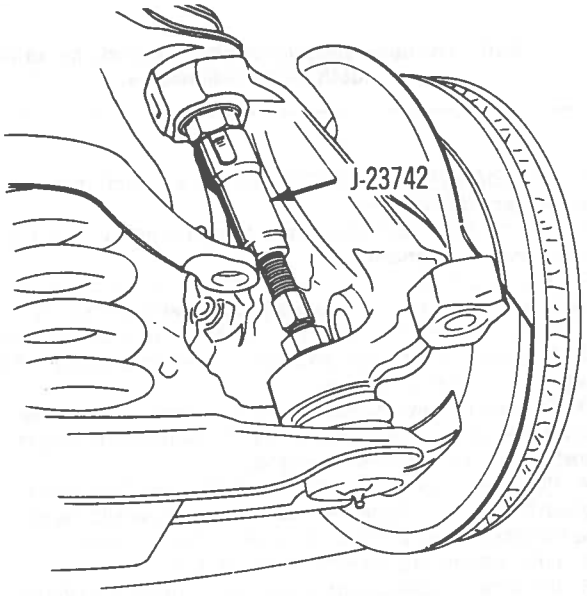
3 Place a floor jack or jackstand under the lower control arm spring seat, raising it just enough to take all spring pressure off the upper control arm.

4 Remove the tie-rod from the steering knuckle (see Section 13).

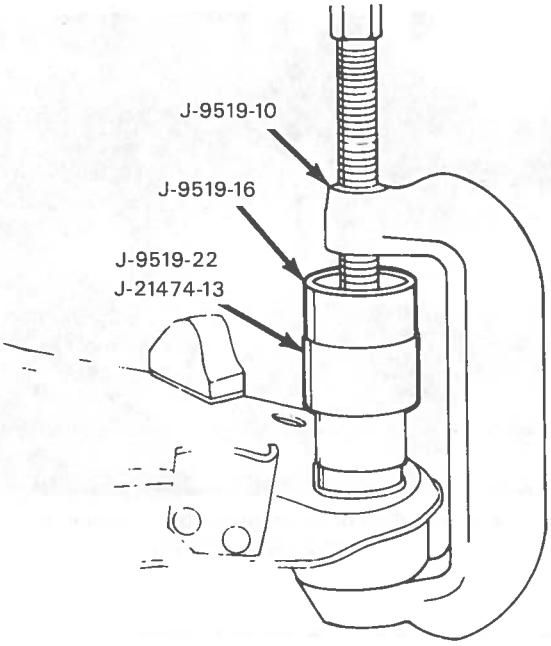
5 Remove the cotter pin and nut from the lower balljoint stud **(see illustration)**.

6 Use GM tool No. J-23742 or equivalent to remove the lower balljoint stud from the steering knuckle **(see illustration)**.

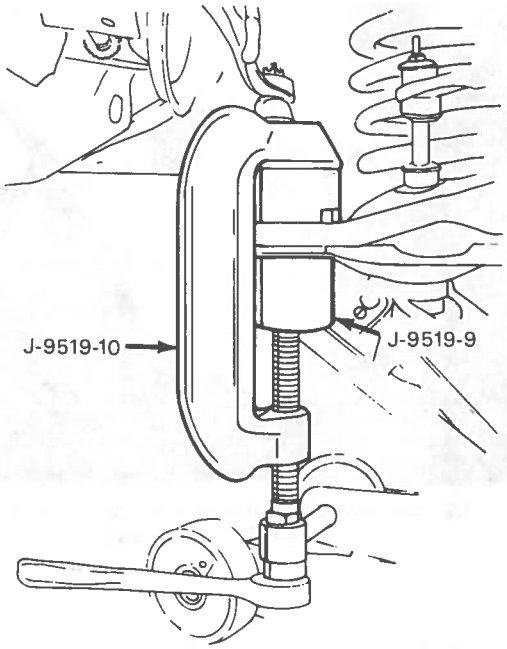
7 Remove the cotter pin and nut from the upper balljoint stud.



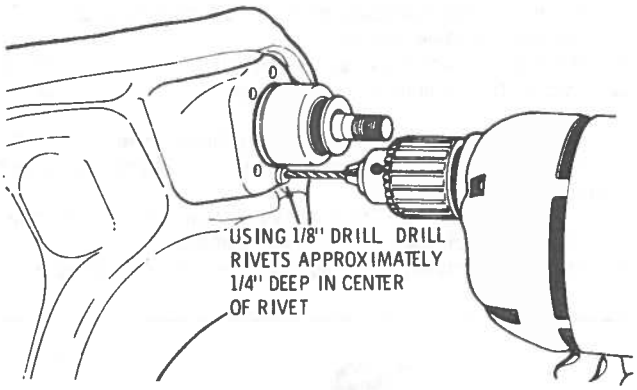
5.6 This expansion tool is used to break the balljoint loose (2WD models)



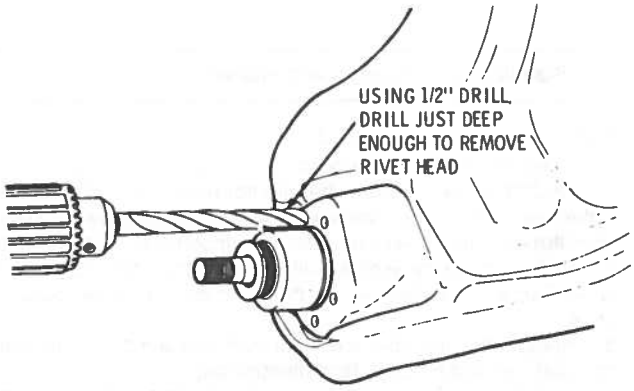
5.8 Removing the lower balljoint from the control arm



5.9 Lower balljoint installation

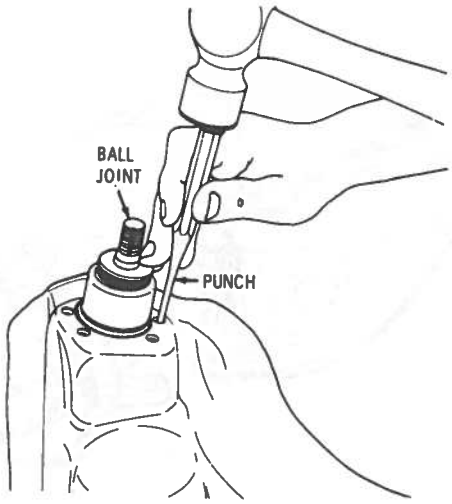


5.10 The upper balljoint can be removed after drilling out the rivets (all models)

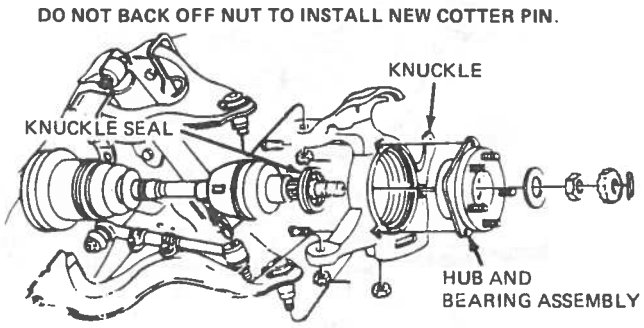


5.11 Removing the rivet heads

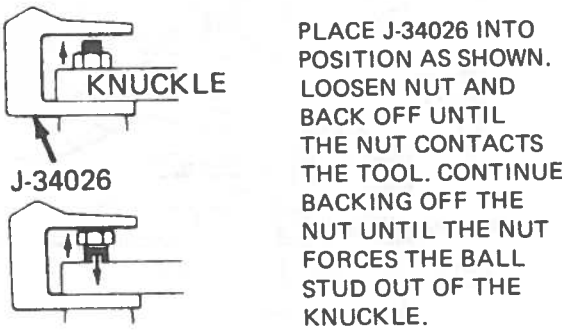
8 Use GM tool No. J-23742 to remove the stud from the steering knuckle **(see illustration)**.
9 Remove the lower balljoint from the control arm by pressing it out as shown **(see illustration)**.
10 The upper balljoint is removed by using a 1/8-inch diameter bit to drill 1/4-inch deep into the four mounting rivets **(see illustration)**.
11 Drill off the rivet heads using a 1/2-inch bit **(see illustration)**.
12 Remove the rivets with a small punch **(see illustration)** and slide the balljoint out of the control arm.
13 To install the lower balljoint position the new unit in the lower control arm and press it in until it bottoms. The grease purge opening on the seal must be facing in, towards the engine.
14 Place the balljoint stud in the steering knuckle, thread on the nut and tighten it to 90 ft-lbs. Tighten additionally as necessary to line up the slot in the nut with the hole in the stud and install the cotter pin.
15 Lubricate the balljoint with chassis grease.
16 Install the new balljoint in the upper control arm, using the four attaching bolts which came with the balljoint, and tighten the nuts to 8 ft-lbs.
17 Place the balljoint stud in the steering knuckle, thread on the nut, and tighten to 65 ft-lbs. Install the cotter pin.



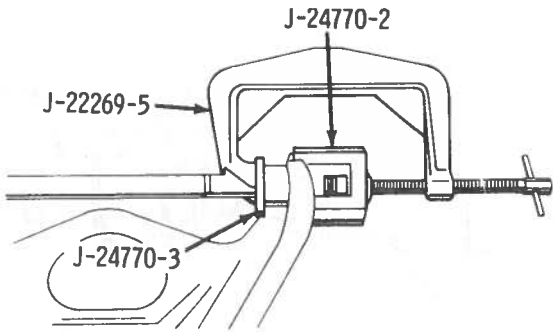
5.12 The balljoint rivets must be driven out with a punch



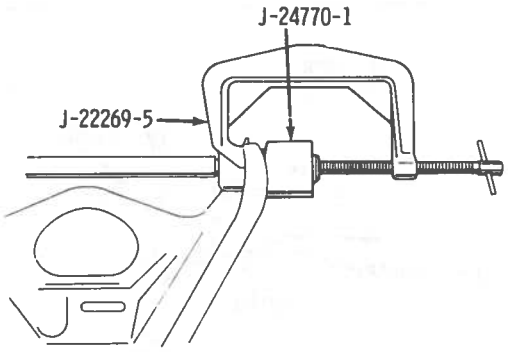
6.6 An exploded view of the steering knuckle assembly (4WD models)


KNUCKLE
J-34026
PLACE J-34026 INTO POSITION AS SHOWN. LOOSEN NUT AND BACK OFF UNTIL THE NUT CONTACTS THE TOOL. CONTINUE BACKING OFF THE NUT UNTIL THE NUT FORCES THE BALL STUD OUT OF THE KNUCKLE.

6.9 Tool used to break the balljoints loose on 4WD models



7.6 Removing the upper control arm bushing



7.7 Upper control arm bushing installation

18 Lubricate the balljoint with chassis grease.
19 Replace the wheel and lower the vehicle.

6 Steering knuckle and balljoints (4WD models) – removal and installation

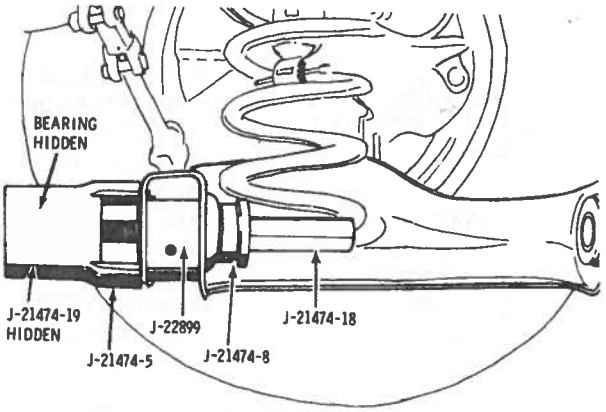
Refer to illustrations 6.6 and 6.9

1 Loosen the lug nuts of the wheel to be removed.
2 Raise the vehicle and support it securely on jackstands.
3 Remove the wheel.
4 Position a hydraulic jack under the lower control arm to support the control arm.
5 Remove the tie-rod from the steering knuckle (see Section 13).
6 Remove the spindle cotter key, nut cover, nut and washer **(see illustration)**.
7 If the steering knuckle seal is to be changed remove the three bolts holding the hub and bearing assembly to the steering knuckle and slide the hub out of the knuckle.
8 Remove the cotter pins and nuts from the upper and lower balljoint studs.
9 Using GM tool No. J-34026 or equivalent **(see illustration)** remove the balljoint studs from the steering knuckle. **Note:** *Do not use a "pickle fork" type of balljoint tool, as this can damage the balljoint seals.*
10 Use a 1/8-inch diameter drill bit to drill 1/4-inch deep into the balljoint mounting rivets (four rivets on the upper control arm and four on the lower).
11 Drill off the rivet heads using a 1/2-inch drill bit.
12 Use a small punch to remove the rivet shafts and the balljoints will fall out of the control arms.
13 Install the new balljoints using the attaching nuts and bolts which came with the new balljoints. Tighten the nuts to 8 ft-lbs.
14 Place the balljoint studs in the steering knuckle and thread on the nuts. Tighten the upper balljoint nut to 50 ft-lbs and the lower balljoint to 83 ft-lbs. Tighten the nuts further as necessary to install the cotter pins.
15 Reinstall the tie-rod and tighten to 35 ft-lbs.
16 Grease the new balljoints.
17 The remainder of the installation is the reverse of the removal procedure.

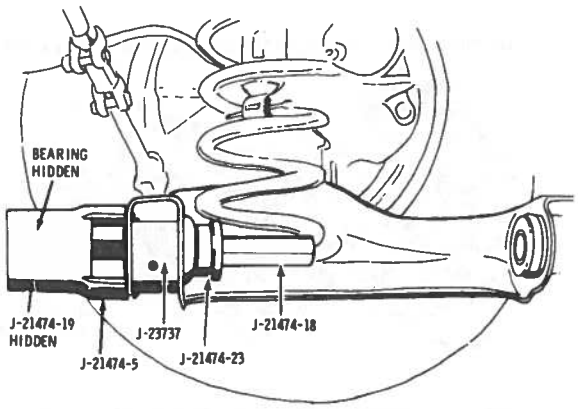
7 Upper control arms – removal and installation

Refer to illustrations 7.6 and 7.7

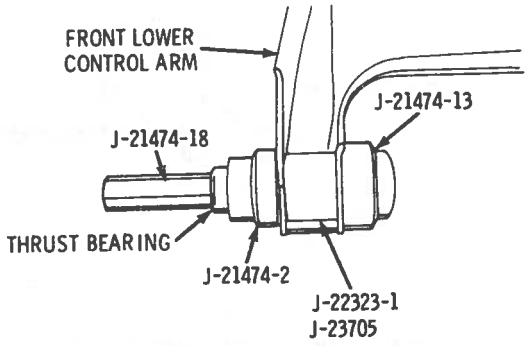
1 Raise the vehicle and support it securely on jackstands.
2 Support the lower control arm with a hydraulic jack. The support point must be as close to the balljoint as possible to give the maximum leverage on the coil spring or torsion bar.
3 Remove the wheel.
4 Disconnect the upper balljoint from the steering knuckle (see Section 5 or 6).
5 On 2WD models, remove the upper control arm bolts and detach the upper control arm. Note the position of the alignment shims which are installed between the pivot shaft and frame. They will have to be reinstalled in the same position when replacing the control arm. On 4WD models, mark the positions of the camber adjusting cups then remove the pivot bolts.
6 Replace the bushings in the control arm. On 2WD models use a C-clamp and receiver cup to remove the bushings **(see illustration)**. A threaded puller and receiver cup works well to remove the bushings on 4WD models.
7 Installation is the reverse of removal **(see illustration)**. Tighten all bolts to the torque listed in this Chapter's Specifications.



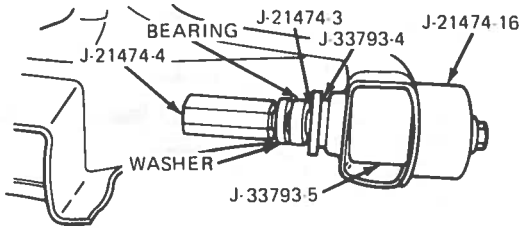
8.5a Removing the lower control arm front bushing (2WD models)



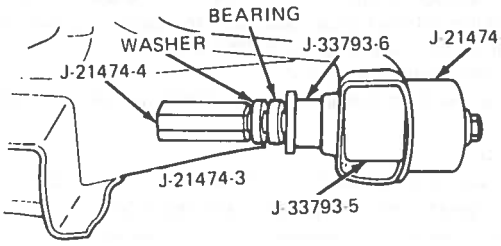
8.5b Front bushing installation (2WD models)



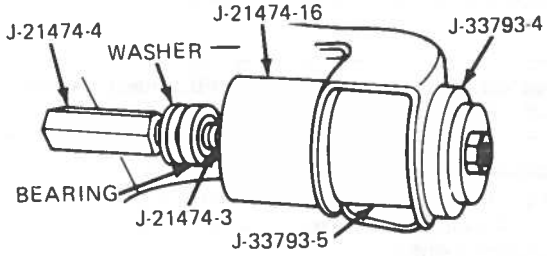
8.6 On 2WD models, the bushing must be flared after installation



8.14a Removal of lower control arm front bushing (4WD models)



8.14b Removal of lower control arm rear bushing (4WD models)



8.14c Installation of lower control arm front bushing (4WD models)

8 Lower control arms – removal and installation

2WD models

Refer to illustrations 8.5a, 8.5b and 8.6

1 Remove the coil spring (see Section 9).

2 Disconnect the lower balljoint stud from the steering knuckle (see Section 5).

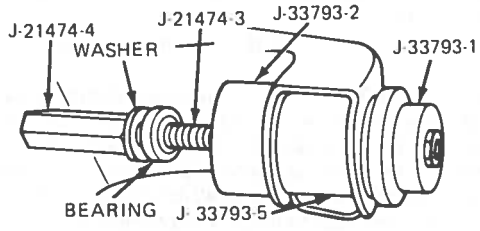
3 Remove the lower control arm, guiding it out through the opening in the splash shield.

4 Using a blunt chisel, drive the bushing flare down flush with the rubber bushing.

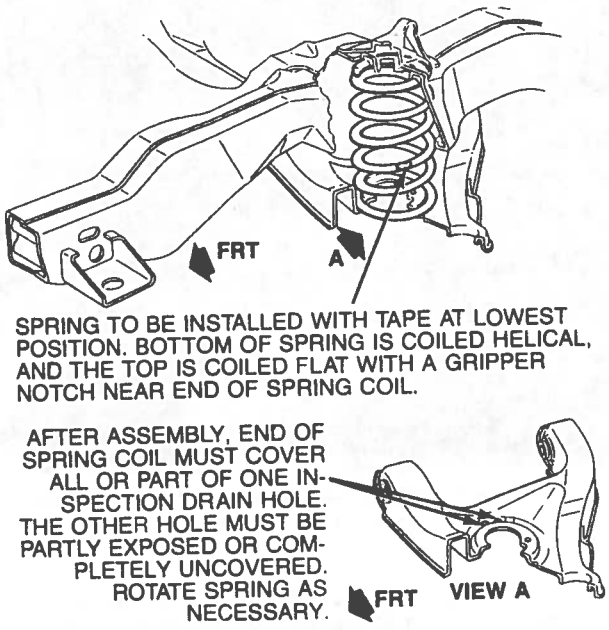
5 Remove the bushings and install new ones as shown **(see illustrations)**.

6 Use a flaring tool to flare the replacement bushing **(see illustration)**.

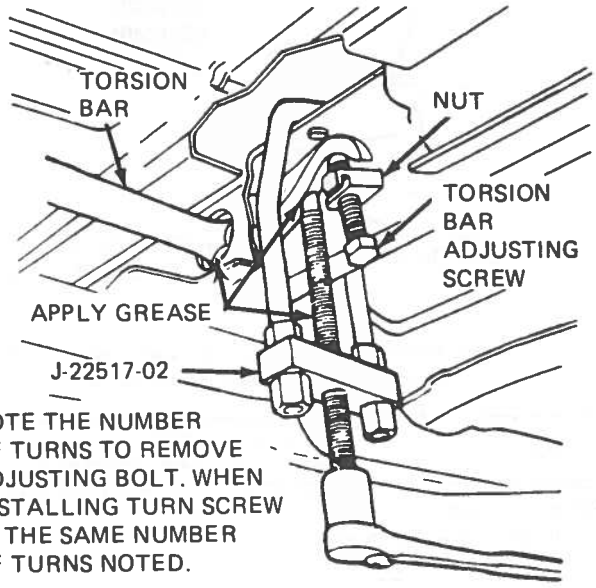
7 Installation is the reverse of the removal procedure.



8.14d Installation of lower control arm rear bushing (4WD models)


FRT
A
SPRING TO BE INSTALLED WITH TAPE AT LOWEST POSITION. BOTTOM OF SPRING IS COILED HELICAL, AND THE TOP IS COILED FLAT WITH A GRIPPER NOTCH NEAR END OF SPRING COIL.
AFTER ASSEMBLY, END OF SPRING COIL MUST COVER ALL OR PART OF ONE INSPECTION DRAIN HOLE. THE OTHER HOLE MUST BE PARTLY EXPOSED OR COMPLETELY UNCOVERED. ROTATE SPRING AS NECESSARY.
FRT
VIEW A

9.9 The coil spring must be installed as shown

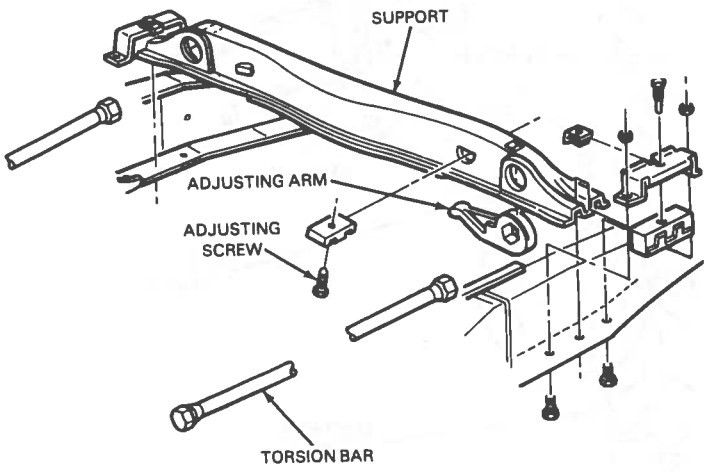

TORSION BAR
NUT
TORSION BAR ADJUSTING SCREW
APPLY GREASE
J-22517-02
NOTE THE NUMBER OF TURNS TO REMOVE ADJUSTING BOLT. WHEN INSTALLING TURN SCREW IN THE SAME NUMBER OF TURNS NOTED.

10.2 You'll need a special preload tool to relieve tension on the torsion bar

4WD models

Refer to illustrations 8.14a, 8.14b, 8.14c and 8.14d

8 Raise the vehicle and support it on jackstands.
9 Unload the torsion bar (see Section 10).
10 Unbolt the stabilizer bar mounting cups on both sides and pivot the stabilizer bar down to clear the control arm.
11 Remove the lower shock absorber mounting bolt.
12 Remove the inner control arm pivot bolts.
13 Remove the lower balljoint stud (see Section 6).
14 Remove the old control arm bushings and install new ones **(see illustrations)**.
15 Installation is the reverse of the removal procedure.



10.4 An exploded view of the torsion bar suspension components (4WD models)

9 Front coil springs (2WD models) – removal and installation

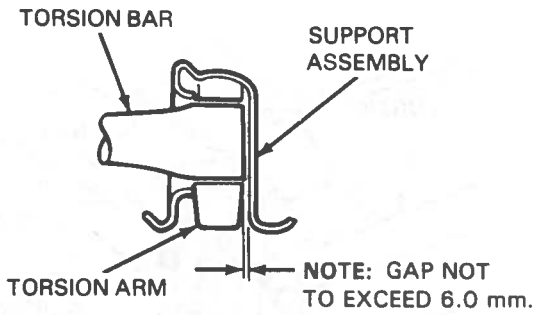
Refer to illustration 9.9

1 Raise the vehicle and support it on jackstands placed under the outside frame rails. The lower control arms must be free to move.
2 Remove the wheel.
3 Remove the shock absorber-to-lower control arm bolts and push the shock up into the coil spring.
4 Disconnect the stabilizer bar at the lower control arm.
5 Use GM tool No. J-23028 or equivalent, mounted on a jack, to support the inner control arm bushings. Raise the jack just enough to remove the tension from the bushing pivot bolts.
6 Install a chain around the spring and through the control arm as a safety precaution.
7 Remove the rear pivot bolt, then the front bolt.
8 Lower the control arm and spring. When all tension is removed from the spring remove the safety chain and work the spring out of the control arm pocket. Do not apply force to the control arm-to-steering knuckle balljoint to remove the spring. Proper maneuvering will allow the spring to come free.
9 Installation is the reverse of the removal procedure. Be sure the spring is positioned correctly **(see illustration)**.

10 Torsion bar (4WD models) – removal and installation

Refer to illustrations 10.2, 10.4 and 10.9

1 Raise the vehicle and support it securely on jackstands.
2 Install a special preload tool over the torsion bar support as shown **(see illustration)**.
3 Counting the number of turns, remove the torsion bar adjusting screw.
4 Remove the nuts and bolts from the support retainer **(see illustration)**. Remove the support retainer.
5 Slide the torsion bar forward in the lower control arm until it clears the torsion bar support.
6 Pull down on the torsion bar and detach it from the control arm.
7 Remove the adjusting arm from the torsion bar support.



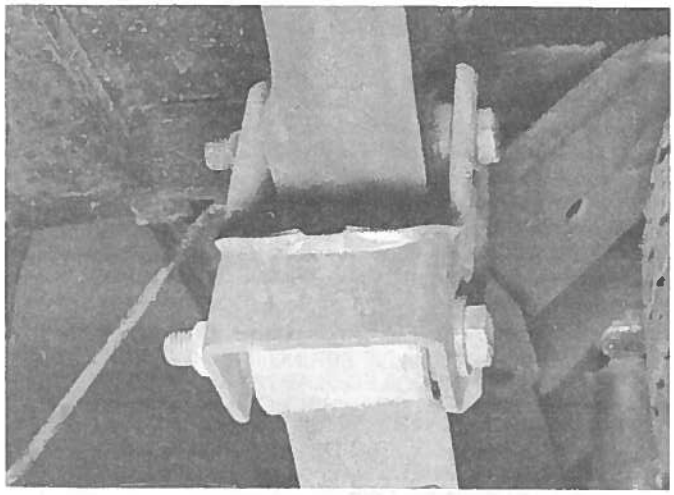
10.9 The clearance measurement indicated here should be checked after torsion bar installation

8 Before installing the torsion bar apply some grease to the top of the adjusting arm and to the end of the adjusting bolt. Also, apply some grease to the hex-shaped surface of the torsion bar.
9 Finally, check the torsion arm-to-support assembly clearance after installation **(see illustration)**.

11 Rear leaf spring – removal and installation

Refer to illustrations 11.3, 11.4 and 11.17

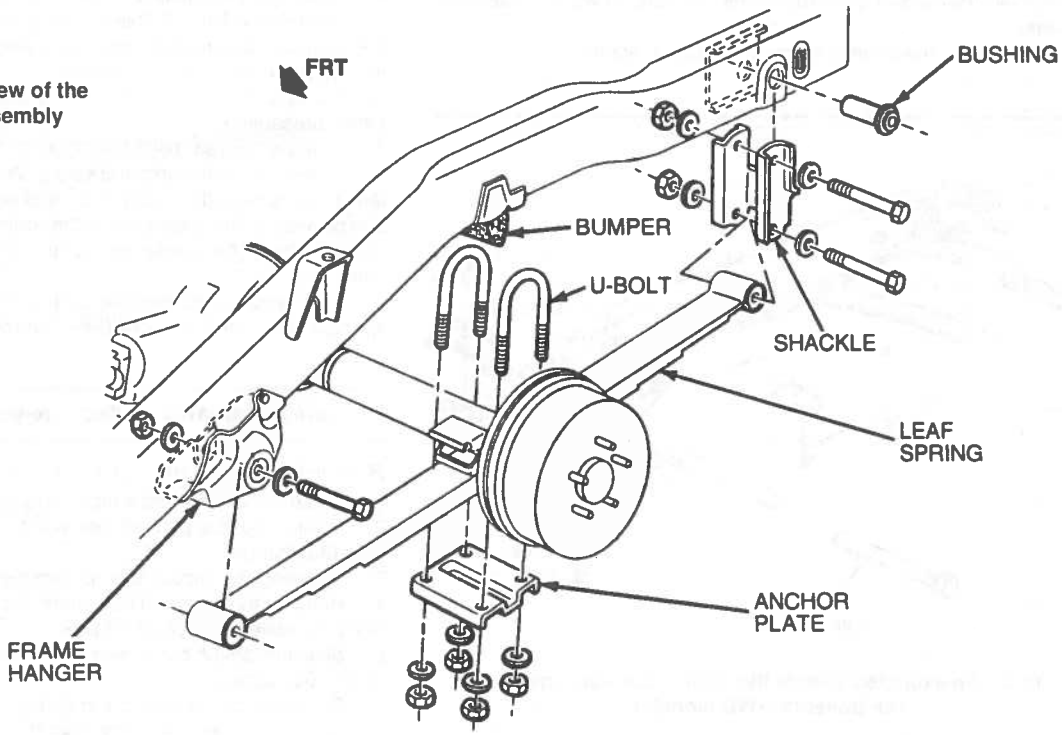
1 Raise the vehicle until the weight is off the rear spring to be worked on, but the tire is still touching the ground.
2 Support the frame securely on jackstands.
3 Loosen, but do not remove, the spring-to-shackle retaining nut **(see illustration)**.
4 Remove the U-bolt retaining nuts **(see illustration)** and detach the U-bolts.
5 Rotate the spring anchor plate on the shock absorber until the plate clears the spring.

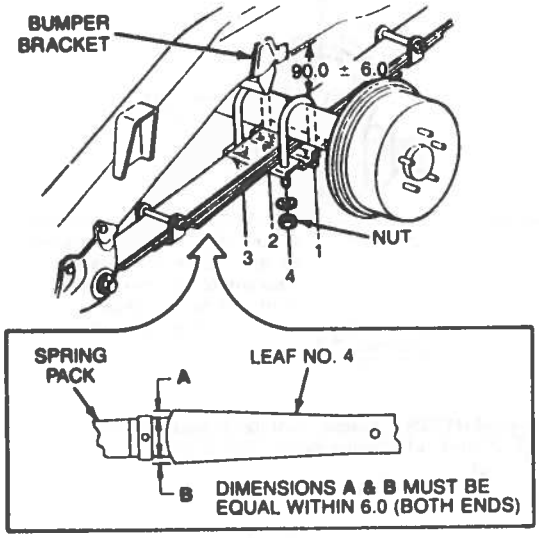


11.3 The rear leaf spring must be free to pivot down, so loosen the spring-to-shackle nut

6 Remove the nut and bolt securing the spring shackle to the frame.
7 Remove the nut and bolt from the front hanger and detach the spring.
8 If the spring eye bushings are worn or damaged they must be replaced by an automotive repair shop with the necessary hydraulic press and associated tools.
9 Clean the axle spring pad before installing the spring.
10 Attach the spring at the front hanger but do not tighten the bolt to the final torque.
11 Attach the spring shackle to the frame (be sure the open end of the shackle faces forward, but do not tighten the bolt to the final torque.
12 Make sure that the shackle bolt in the rear spring eye is loose.
13 Position the axle spring pad on the spring so that the center bolt head seats into the hole in the spring pad seat.
14 Rotate the anchor plate into position and install the U-bolts fingertight.
15 Tighten the U-bolt nuts, in a criss-cross pattern, to 20 ft-lbs.

11.4 An exploded view of the rear leaf spring assembly (all models)





11.17 Check the alignment and arc of the spring leafs

16 Lower the vehicle completely and tighten the U-bolt nuts to the torque listed in this Chapter's Specifications.
17 Check to be sure that the leaves are properly seated by comparing the side overhang dimensions – A and B – on each side **(see illustration)**.
18 Check the height dimension between the bumper bracket and the axle tube as shown in the accompanying illustration.
19 Tighten the front and rear spring eye bolts and the shackle-to-frame bolts to the torque listed in this Chapter's Specifications.

12 Steering system – general information

Refer to illustration 12.1

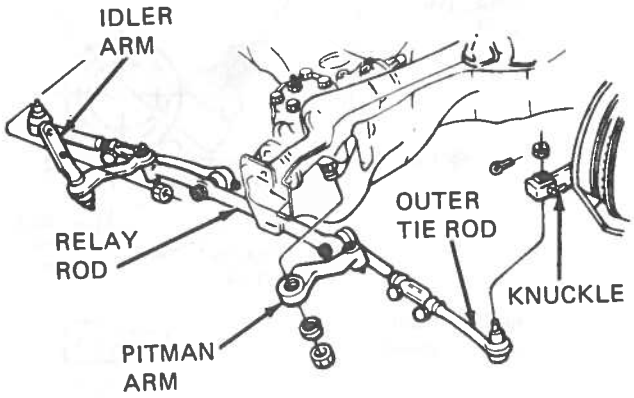
The steering linkage **(see illustration)** connects both front wheels to the steering gear through the Pitman arm. The right and left tie-rods are attached to the steering knuckles and to the relay rod by balljoints. The left end of the relay rod is supported by the Pitman arm, which is driven by the steering gear. The right end of the relay rod is supported by the idler arm, which pivots on a support bolted to the frame rail. The Pitman arm and idler arm move in symmetrical arcs and remain parallel to each other.

The tie-rods and tie-rod ends may be removed and installed by carefully following the procedures set forth in the Section that follows. However, the replacement and alignment of the relay rod, Pitman arm and/or the idler arm requires the use of special tools and alignment equipment not normally in the possession of the home mechanic. These procedures, therefore, should be done by a GM dealer or a front-end alignment shop.

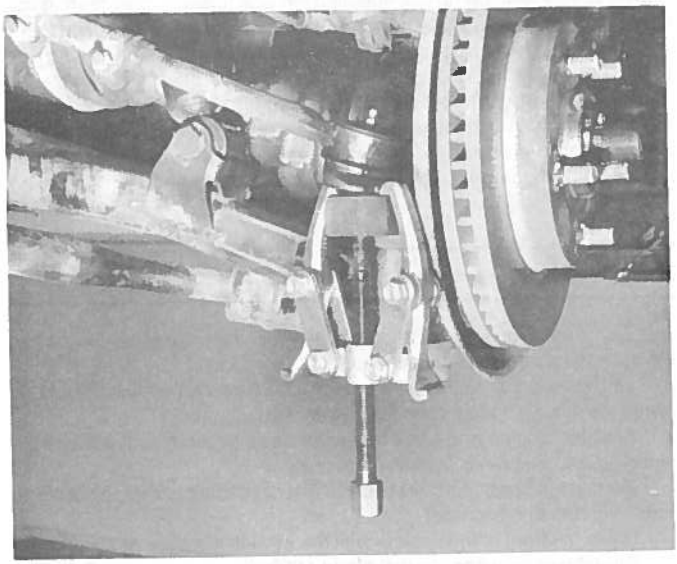
13 Tie-rods – removal and installation

Refer to illustrations 13.3 and 13.12

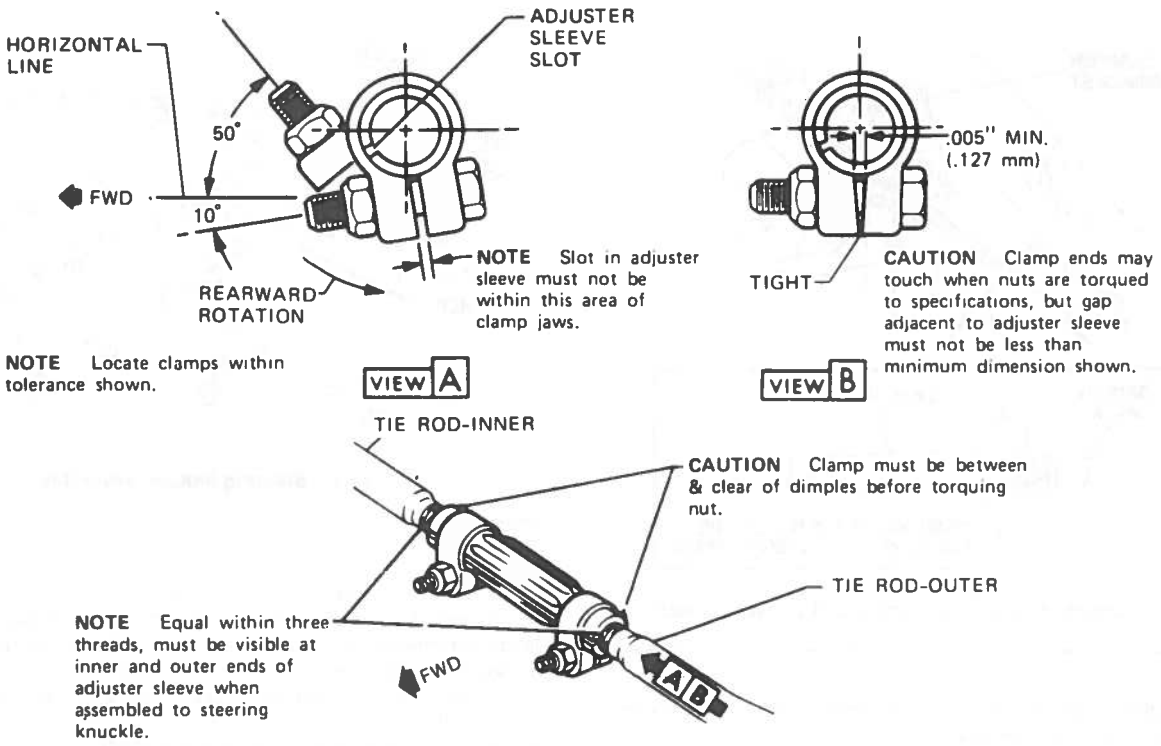
1 Raise the vehicle and place it securely on jackstands.
2 Remove the cotter pins and nuts from the ends of the tie-rod.
3 Using the special tool **(see illustration)**, remove the outer end of the tie-rod from the steering knuckle. **Note:** *Do not use a "pickle fork" type tool to remove the tie-rod end, as seal damage may result.*
4 Using the same tool referred to in Step 3 remove the inner end of the tie-rod from the relay rod.
5 If the tie-rods are to be disassembled and reassembled using the same tie-rod ends, mark the threads of the tie-rod ends with white paint so they can be reassembled to the original length.
6 If new tie-rod ends are to be installed carefully measure the overall length of the tie-rod assembly before removing the tie-rod ends so the assemblies can be adjusted to the original length.
7 To remove the tie-rod ends loosen the clamp nuts and unscrew the tie-rod ends.
8 If new tie-rod ends are used, lubricate the threads with multi-purpose chassis grease and install the ends, making sure both ends are threaded an equal distance into the tie-rod and that the overall length is the same as recorded in Step 6. If the old tie-rod ends were removed and are being reinstalled, apply grease to the threads and reinstall the ends to the depth marked by the white paint (see Step 5). Install the clamps but do not tighten them at this time.
9 Carefully remove all dirt from the threads of the tie-rod balljoint studs and nuts. If the threads are not clean binding may occur and the studs may turn in the tie-rod ends when attempting to tighten the nuts. Also make sure the tapered surfaces of the balljoints are clean and that the seals are installed on the studs.
10 Attach the assembled tie-rod to the steering linkage.
11 Tighten the retaining nuts to the torque listed in this Chapter's Specifications, then, if necessary, tighten the nuts farther to permit the insertion of the cotter pins.



12.1 Steering linkage assembly



13.3 Using a puller to separate the tie-rod from the steering knuckle


HORIZONTAL LINE
ADJUSTER SLEEVE SLOT
50°
FWD
10°
REARWARD ROTATION
NOTE Slot in adjuster sleeve must not be within this area of clamp jaws.
NOTE Locate clamps within tolerance shown.
VIEW A
.005" MIN. (.127 mm)
TIGHT
CAUTION Clamp ends may touch when nuts are torqued to specifications, but gap adjacent to adjuster sleeve must not be less than minimum dimension shown.
VIEW B
TIE ROD-INNER
CAUTION Clamp must be between & clear of dimples before torquing nut.
TIE ROD-OUTER
NOTE Equal within three threads, must be visible at inner and outer ends of adjuster sleeve when assembled to steering knuckle.
FWD
AB

13.12 Relationship of the tie-rod clamp and sleeve

12 Adjust the tie-rod clamps as shown **(see illustration)**, then tighten the clamps to the torque listed in this Chapter's Specifications.
13 Lubricate the tie-rod ends with the specified grease.
14 Remove the jackstands and lower the vehicle.
15 A front end alignment must now be performed by a GM dealer service department or an alignment shop.

14 Power steering system – general information

With the optional power steering gear, hydraulic pressure is generated in an engine-driven pump and supplied through hoses to the steering box spool valve. When the steering wheel is turned and force is applied to the steering shaft, hydraulic pressure is added and power assistance is given to the turning effort.

The sections which follow concern procedures that can be performed by the home mechanic. However, due to the requirements for special tools and diagnostic procedures, major repairs to the power steering system should be performed by a dealer or reputable repair shop.

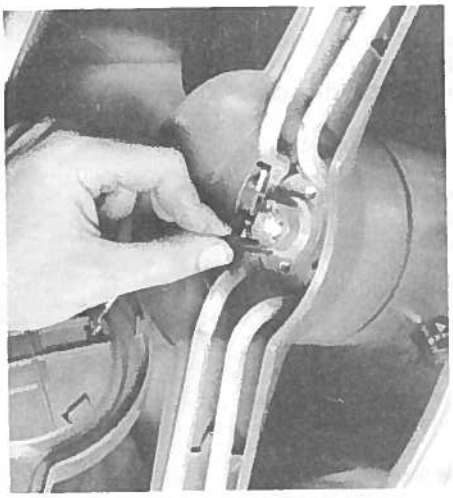
15 Power steering system – bleeding

1 This is not a routine operation and normally will only be required when the system has been dismantled and reassembled.
2 Fill the reservoir to the correct level with the recommended fluid and allow it to remain undisturbed for at least two minutes.
3 Start the engine and run it for two or three seconds only. Check the reservoir and add more fluid as necessary.
4 Repeat the operations described in the preceding paragraph until the fluid level remains constant.
5 Raise the front of the vehicle until the wheels are clear of the ground.
6 Start the engine and run it at about 1500 rpm. Turn the steering from stop to stop. Check the reservoir fluid level.
7 Lower the vehicle to the ground and, with the engine still running, move the vehicle forward sufficiently to obtain full right lock, followed by full left lock. Recheck the fluid level. If the fluid in the reservoir is getting foamy allow the vehicle to stand for a few minutes with the engine off, then repeat the previous operations. At the same time check the belt tightness. Check to make sure the power steering hoses are not touching any part of the vehicle such as sheet metal or the exhaust manifold.
8 The procedures above will normally remedy an extreme foam condition and/or a noisy pump. If, however, either or both conditions persist after a few trials, the power steering system will have to be checked by a dealer. Do not drive the vehicle until the conditions have been remedied.

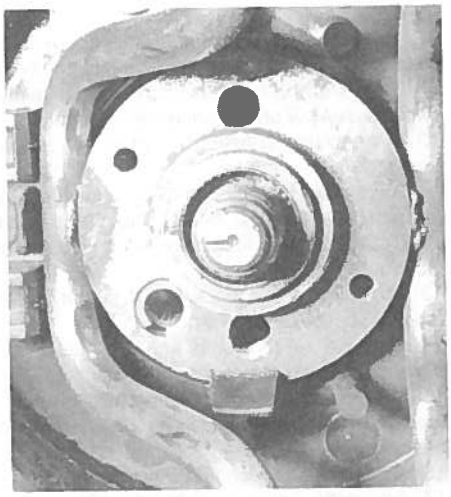
16 Power steering gear – removal and installation

1 Disconnect the cable from the negative battery terminal.
2 Remove the coupling shield.
3 Disconnect the pressure and return hoses attached to the power steering gear assembly.
4 Plug or tape the ends of the disconnected hoses and the holes in the power steering housing to prevent contamination.
5 Remove the nuts, lockwashers and bolts at the steering coupling-to-steering shaft flange.
6 Remove the Pitman arm locknut and washer. Mark the position of the Pitman arm in relation to the shaft and disconnect the Pitman arm with a puller.
7 Remove the bolts securing the steering gear to the frame and separate it from the vehicle.
8 When installing the gear place it in position so that the coupling mounts properly to the flanged end of the steering shaft. Secure the gear to the frame, install the washers and bolts, then tighten down the bolts to the torque listed in this Chapter's Specifications.
9 Secure the steering coupling to the flanged end of the column with the lock washers and nuts. Tighten the nuts.
10 Install the Pitman arm, lining up the marks made during disassembly, and tighten the nut.
11 Connect the coupling shield and negative battery cable.

18.2 Removing the steering wheel shroud



18.3 Removing the horn contact and spring



18.5 The steering wheel and shaft should be marked before removing the steering wheel

17 Power steering pump – removal and installation

1 Disconnect the hydraulic hoses from the pump and keep them in the raised position to prevent the fluid from leaking out until they can be plugged.
2 Remove the pump drivebelt by loosening the pump mounts and pushing it in toward the engine.
3 Unscrew and remove the pump mounting bolts and braces and remove the pump.
4 Installation is the reverse of removal.
5 Prime the pump by turning the pulley in the reverse direction to that of normal rotation (counterclockwise as viewed from the front) until air bubbles cease to emerge from the fluid when observed through the reservoir filler cap.
6 Install the drivebelt and adjust it (see Chapter 1).
7 Bleed the system (see Section 15).

18 Steering wheel – removal and installation

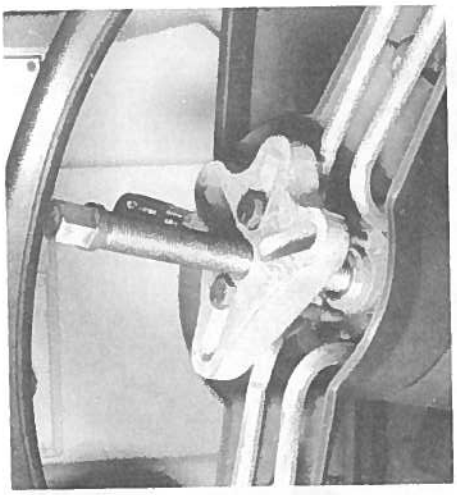
Refer to illustrations 18.2, 18.3, 18.5 and 18.6

1 Disconnect the negative battery cable from the battery.
2 Use a 7mm socket to remove the steering wheel shroud screws on the underside of the steering wheel **(see illustration)**. Detach the shroud.
3 Remove the horn contact bushing and spring **(see illustration)**.
4 Remove the retainer clip and steering wheel retaining nut. A socket and breaker bar will be needed to remove the retaining nut.
5 Mark the steering wheel and steering shaft so the wheel can be reinstalled in the same position **(see illustration)**.
6 Use a steering wheel puller to remove the steering wheel from the column **(see illustration)**.
7 Installation is the reverse of removal.

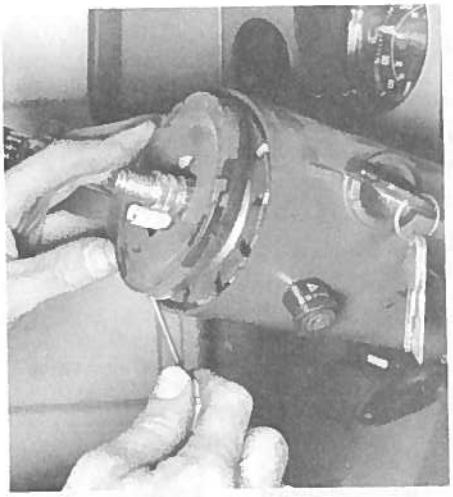
19 Steering column switches – removal and installation

Refer to illustrations 19.2, 19.3, 19.8, 19.9, 19.11, 19.13 and 19.15

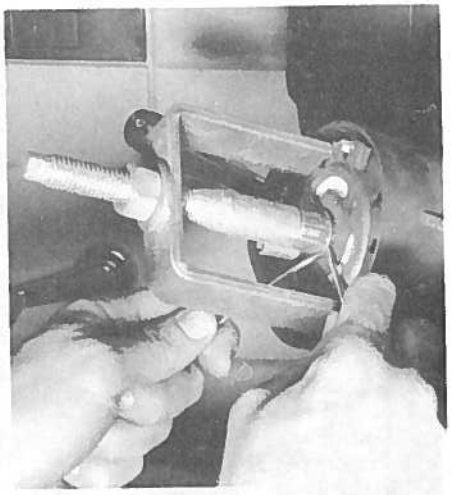
1 Remove the steering wheel (see Section 18).
2 Pry the shaft lock cover off the steering column **(see illustration)**.
3 Depress the lockplate and remove the lockplate retaining ring **(see illustration)**.
4 Remove the lockplate.
5 Remove the cancelling cam.
6 Remove the upper bearing spring and washer.
7 Remove the mounting screw from the base of the turn signal lever and



18.6 Using a steering wheel puller to remove the steering wheel

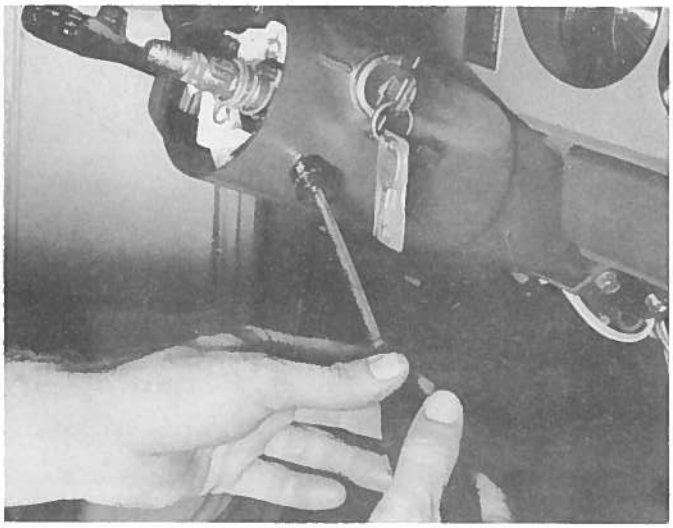


19.2 Removing the steering column shaft lock cover

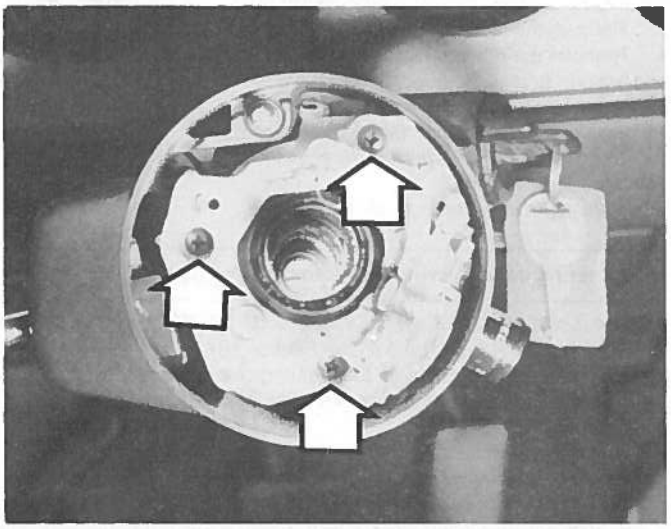


19.3 Depress the lockplate and pry out the retaining ring

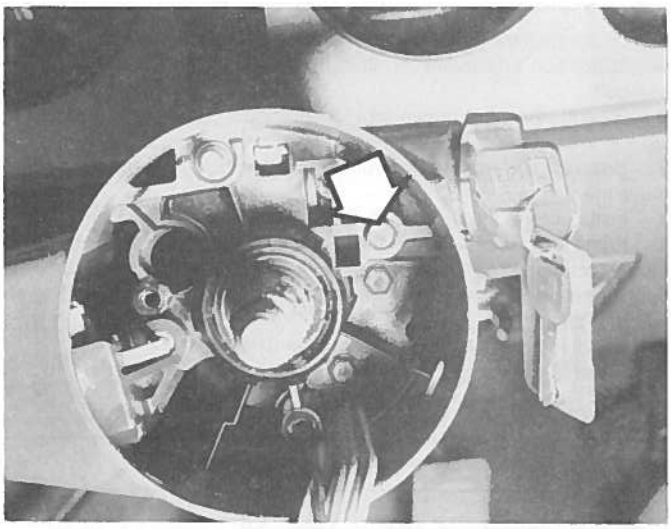
detach the turn signal lever.
8 Remove the hazard signal knob screw on the outside of the steering column and detach the hazard signal knob **(see illustration)**.
9 Remove the three mounting screws **(see illustration)** from the signal switch assembly and remove the assembly.
10 If the switch assembly is not being replaced, it can be left hanging from the steering column.
11 To remove the ignition lock cylinder, first remove the lock cylinder retaining screw from inside the column **(see illustration)**.
12 Turn the ignition lock cylinder to the Run position and pull the lock cylinder out.
13 To replace the signal switch assembly, first remove the steering column trim cover **(see illustration)**.
14 Remove the four bolts and two nuts from the steering column-to-dashboard brace to free the wiring harness.
15 Disconnect the switch wiring harness at the bottom of the column **(see illustration)** and attach a routing wire to the end of the switch harness.
16 Remove the switch and wiring harness from the steering column.
17 Attach the replacement switch wiring harness to the routing wire and install the harness in the column.
18 Connect the wiring harness. Install the two bracket nuts and the four bolts.
19 The rest of installation is the reverse of removal.



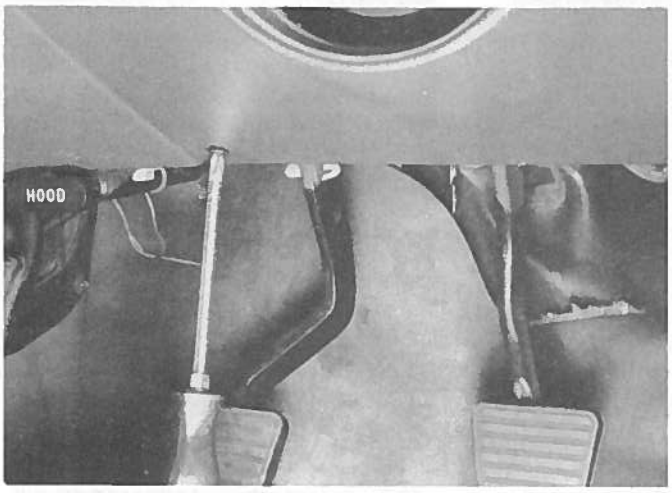
19.8 Removing the hazard signal knob



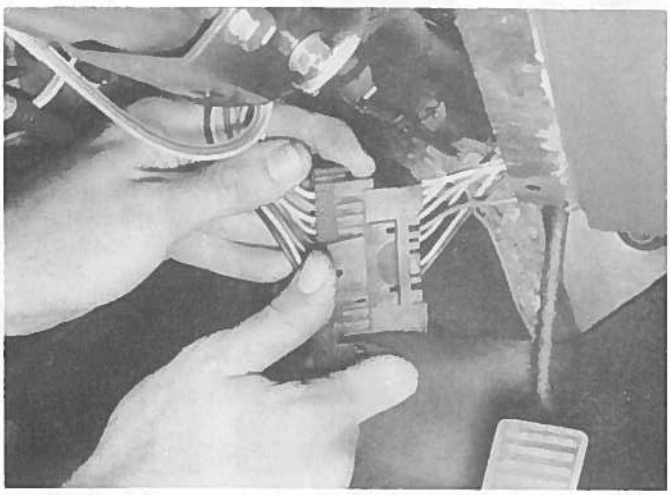
19.9 Location of the turn signal switch mounting screws



19.11 Location of the ignition lock cylinder retaining screw



19.13 Removing the steering column trim cover



19.15 The turn signal switch wiring harness is disconnected at the bottom of the steering column